

Notice of Allowability

Application No.

10/714,186

Examiner

Joon H. Hwang

Applicant(s)

SAMSONOV, YEVGENIY A.

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to a telephone interview with Jens C. Jenkins (Reg. No. 44,803) on 3/14/07.
2. ☒ The allowed claim(s) is/are 1-8,10-12,15-21,23-36 and 38-41 (renumbered as 1-36).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. The applicant amended claims 1, 10-12, 22-32, and 41-42 in the amendment filed on 12/20/06.

The pending claims are 1-42.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jens C. Jenkins (Reg. No. 44,803) on 3/14/07.

The application has been amended as follows:

Rewrite claim 1 as follows:

"1. A computer system for building large indexes comprising:
an index engine operably configured for coupling with an indexer plug-in;
an indexer plug-in having an index merger for concurrently indexing content in a plurality of sub-indexes and merging at least some of the sub-indexes created at a plurality of stages during indexing of the content, wherein the plurality of stages includes at least a first stage where a first set of sub-indexes are merged into new sub-indexes

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and at least a second stage where a plurality of new sub-indexes are merged into a master index; and

one or more computer-executable instructions stored in a computer-readable storage medium, which when executed, cause the computer system to implement a method that includes:

- determining a number of stages for merging the sub-indexes by at least calculating a sum of half a number of sub-indexes at each stage and a product of the number of stages and the number of sub-indexes at each stage, wherein the stages are hierarchically arranged;

- determining the number of sub-indexes for each stage;

- building a sub-index in volatile memory;

- storing the sub-index in persistent storage as belonging to one of the stages;

- merging sub-indexes at a stage before a number of sub-indexes at said stage exceeds the number of sub-indexes determined for said stage; and

- storing the merged sub-indexes into the master index.”;

Rewrite claim 7 as follows:

“7. The system of claim 1 further comprising the master index resulting from merging all of the sub-indexes created during indexing of content.”;

Rewrite claim 8 as follows:

"8. The system of claim 7 wherein the master index comprises a dictionary.";

Cancel claim 9;

Rewrite claim 10 as follows:

"10. A method for building a large index in a computer system, comprising the steps of:

determining a number of stages for merging sub-indexes by at least calculating a sum of half a number of sub-indexes at each stage and a product of the number of stages and the number of sub-indexes at each stage, wherein stages are hierarchically arranged;

determining a maximum number of sub-indexes for each stage;

building a sub-index in volatile memory;

storing the sub-index in persistent storage as belonging to one of the stages;

merging the stored sub-index with at least one other sub-index into a new sub-index at a particular stage before a total number of sub-indexes within said particular stage exceeds the maximum number of sub-indexes determined for said particular stage; and

subsequently merging and storing the new sub-index with at least one additional sub-index in a new stage based on a predetermined number of new sub-indexes existing in the new stage while simultaneously indexing content into at least one sub-index within said particular stage.";

Rewrite claim 11 as follows:

"11. The method of claim 10 further comprising the step of determining merging of sub-indexes at a certain stage having half of the maximum number of sub-indexes.";

Rewrite claim 12 as follows:

"12. The method of claim 10 further comprising the step of merging all the sub-indexes to create a master index.";

Cancel claim 13;

Cancel claim 14;

Rewrite claim 15 as follows:

"15. The method of claim 10 wherein the sum calculated is not greater than a number of persisted sub-indexes allowed for building the large index in the computer system.";

Rewrite claim 16 as follows:

"16. The method of claim 10 wherein the step of determining a maximum number of sub-indexes for each stage comprises calculating the sum of half the number of sub-indexes at each stage and the product of the number of stages and the number of sub-indexes at each stage.";

Rewrite claim 17 as follows:

"17. The method of claim 16 wherein the sum calculated in the step of determining a maximum number of sub-indexes for each stage is not greater than a number of persisted sub-indexes allowed for building the large index in the computer system.";

Rewrite claim 18 as follows:

"18. The method of claim 10 wherein the step of determining the number of stages for merging sub-indexes comprises calculating a product of a number of items for which index information fits into an index in volatile memory and a quantity of half the number of sub-indexes at each stage raised to the power of one plus the number of stages for merging sub-indexes.";

Rewrite claim 19 as follows:

"19. The method of claim 18 wherein the product of the number of items calculated is not greater than a number of items to be indexed in the large index of the computer system.";

Rewrite claim 20 as follows:

"20. The method of claim 10 wherein the step of determining the number of sub-indexes for each stage comprises calculating a product of a number of items for which

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index information fits into an index in volatile memory and a quantity of half the number of sub-indexes at each stage raised to the power of one plus the number of stages for merging sub-indexes.”;

Rewrite claim 21 as follows:

“21. The method of claim 20 wherein the product of the number of items calculated is not greater than a number of items to be indexed in the large index of the computer system.”;

Cancel claim 22;

Rewrite claim 23 as follows:

“23. The method of claim 10 further comprising merging a copy of sub-indexes for at least one stage.”;

Rewrite claim 27 as follows:

“27. The method of claim 10 further comprising concurrently merging sub-indexes at different stages.”;

Rewrite claim 32 as follows:

“32. A computer system for building a large index, comprising:
a processor;

means for creating sub-indexes at different stages of a processing pipeline;

means for determining a number of different stages of the processing pipeline for merging sub-indexes by at least calculating a sum of half a number of sub-indexes at each stage of the processing pipeline and a product of the number of different stages of the processing pipeline and the number of sub-indexes at each stage of the processing pipeline, wherein different stages of the processing pipeline are hierarchically arranged;

means for concurrently merging particular sub-indexes at different stages of the processing pipeline; and

means for continuously indexing content into other sub-indexes in a first stage of the processing pipeline while simultaneously merging and storing the particular sub-indexes at different stages of the processing pipeline.”;

Cancel claim 37;

Rewrite claim 39 as follows:

“39. The system of claim 32 wherein means for concurrently merging particular sub-indexes at different stages of the processing pipeline comprises means for determining when to merge sub-indexes at different stages of the processing pipeline.”;

Rewrite claim 40 as follows:

"40. The system of claim 32 wherein means for continuously indexing content comprises means for adding new indexing information to sub-indexes at different stages of the processing pipeline while sub-indexes are being merged.";

Rewrite claim 41 as follows:

"41. A method for building a large index in a computer system, comprising the steps of:

determining a number of stages for merging sub-indexes by at least calculating a sum of half a number of sub-indexes at each stage and a product of the number of stages and the number of sub-indexes at each stage, wherein the stages are hierarchically arranged;

determining the number of sub-indexes for each stage;

building a sub-index in volatile memory;

storing the sub-index in persistent storage as belonging to one of the stages;

merging sub-indexes at a stage before a number of sub-indexes at said stage exceeds the number of sub-indexes determined for said stage; and

storing the merged sub-indexes in a next stage."; and

Cancel claim 42.

3. Thus, pending claims are 1-8, 10-12, 15-21, 23-36, and 38-41.

Allowable Subject Matter

4. Claims 1-8, 10-12, 15-21, 23-36, and 38-41 are allowed.
5. The following is an examiner's statement of reasons for allowance:

Claims 1, 10, 32, and 41 identify the distinct features, for building a large index, determining a number of stages for merging sub-indexes by at least calculating a sum of half a number of sub-indexes at each stage and a product of the number of stages and the number of sub-indexes at each stage, wherein the stages are hierarchically arranged, which are not taught or suggested by the prior art of records. The closest prior art, Avadhanam et al. (U.S. Patent No. 6,778,977) disclosing building a master index by merging sub-indexes, fails to suggest the claimed limitations as mentioned above in combination with other claimed elements. The above features in conjunction with all other limitations of the dependent and independent claims 1-8, 10-12, 15-21, 23-36, and 38-41 are hereby allowed.

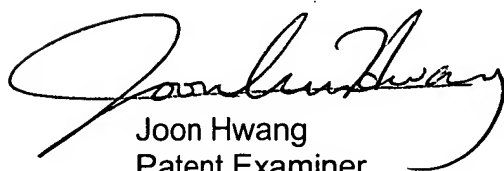
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joon H. Hwang whose telephone number is 571-272-4036. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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3/14/07